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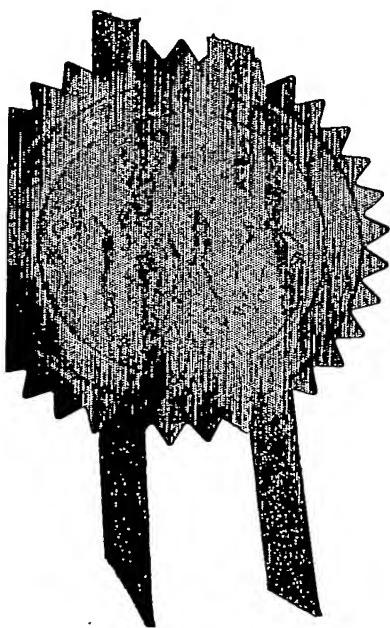
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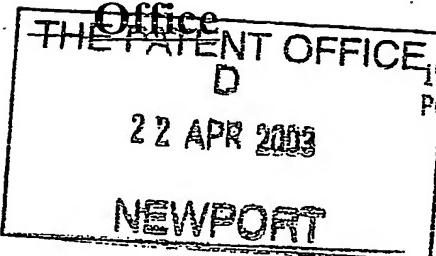
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2. Patent application number <i>(The Patent office will fill in this part)</i>	0309053.7	22 APR 2003		
3. Full name, address and postcode of the or of each applicant <i>(underline all surnames)</i>	SWITCHKEY PROPERTY LIMITED 2 CHAPEL STREET MARLOW BUCKS SL7 1DD UK	8615262021		
Patents ADP number <i>(if you know it)</i>				
If the applicant is a corporate body, give the country/state of its corporation				
4 Title of the invention	CLEANING CLOTH			
5 Name of your agent <i>(if you have one)</i>	DR CHRISTOPHER GERARD PIKE PIKE & CO. HAYES LOFT 68A HAYES PLACE MARLOW BUCKS SL7 2BT 7497928002			
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## Cleaning cloth

### Technical Field

The present invention relates to a cleaning cloth provided with a cleaning media reservoir. The present invention also relates to a hand-cloth interface for receipt of the cleaning cloth and its use in cleaning operations.

### Background to the Invention

Cleaning cloths incorporating embedded cleaning and /or disinfectant media are known. That Applicants have found that it is desirable that the cleaning and /or disinfectant media are made gradually made available to the part of the cloth that is directly being applied to the cleaning operation. The Applicants have also found that it is desirable that the cloth has a means for indicating when the cleaning media is exhausted.

It is an object of the present invention to provide a cleaning cloth that addresses the above desiderata.

It is another object of the present invention to provide a hand-cloth interface (i.e. one which is wearable by the hand) that protects the hand of a user during the undertaking of cleaning tasks using the cleaning cloth.

It is another object of the present invention to provide such a hand-cloth interface-like interface, which affords the user more of the dexterity of the user's hand, such that the interface can form itself to meet any cleaning surface, regardless of its complexity.

It is a further object of the present invention to provide a hand-cloth interface-like interface, which allows the hand to be clenched, for example, for wringing out liquid from the cleaning cloth, without causing discomfort to the wearer.

It is a still further object of the invention to provide a hand-cloth interface-like interface, which is adaptable for use with different sizes of hand and different lengths of finger.

#### Summary of the Invention

According to one aspect of the present invention there is provided a multi-layer form cleaning cloth comprising

- (a) an absorbent cloth layer;
- (b) adjacent to said absorbent cloth layer, a perforate layer comprising at least partly non-transparent material; and
- (c) adjacent to said perforate layer, a fluid impermeable layer comprising at least partly a transparent material, said fluid impermeable layer joining to said perforate layer such that a reservoir for receipt of cleaning media is defined,

wherein the non-transparent perforate layer is visible through the transparent liquid impermeable layer when the reservoir is empty of cleaning media.

The cleaning cloth herein has a multi-layer form. That is to say, it comprises multiple layers of material, the characteristics of which in combination define the functionality of the cleaning cloth.

The cleaning cloth comprises an absorbent cloth layer. The cloth layer may comprise either woven or non-woven cloth material of either synthetic or natural origin.

The cloth layer acts as the 'business end' of the cleaning cloth herein. That is to say, it is the part of the cloth that is directly used to contact surfaces to be cleaned when employed in cleaning operations herein.

Adjacent to the absorbent cloth layer, there is provided a perforate (or part-fluid permeable) layer. The perforate layer may be in the form of a membrane. Suitably the perforate layer permits only one-way passage of cleaning media. That is to say, it permits passage of cleaning media from the reservoir to the absorbent cloth but not in the reverse direction. The perforate layer is typically in joined or at least, in contacting relationship with the absorbent cloth.

The perforate layer comprises at least partly non-transparent material. In one aspect, the perforate layer comprises coloured material. In another aspect, the perforate layer comprises visible markings such as defined indicia (e.g. words or symbols or a repeating pattern thereof).

Adjacent to the perforate layer, there is provided a fluid impermeable layer. The fluid impermeable layer comprises at least partly a transparent material (e.g. formed of clear polythene). The fluid impermeable layer joins to the perforate layer such that a reservoir (e.g. pocket) for receipt of cleaning media is defined therebetween.

In use, the reservoir is provided with cleaning media (e.g. detergent or disinfectant), generally in fluid, gel or water-soluble solid form. The cleaning media is visible to the user through the transparent part of the fluid impermeable layer. In aspects, the cleaning media is coloured such as to enhance its visibility in the reservoir.

In one aspect, the cleaning media is over-printed onto the perforate layer such as in a layer of about 1mm thick. The fluid impermeable layer is then applied over this printed layer and edge-seals formed to provide a sealed reservoir volume.

In accord with the invention however, such cleaning media blocks or otherwise compromises the user's view of the non-transparent perforate layer. The non-transparent perforate layer is visible through the transparent liquid impermeable layer only when the reservoir is essentially empty of (i.e. depleted of) cleaning media.

In use, the cleaning cloth is designed such that cleaning media gradually travels (e.g. as a result of applied pressure or osmosis) from the reservoir through the perforate layer to the absorbent layer where it is used for cleaning purposes. The reservoir therefore becomes progressively depleted of cleaning media until such a point as it is empty, or at least essentially empty for all practical purposes. It is at this point, that the non-transparent perforate layer becomes visible to the user, thereby providing an alert that the cleaning media reservoir has become depleted.

In one particular aspect herein, a layer of domestic or other cleaning cloth, has welded to it a repeating pattern of small circles (or other shapes) so that the circles are evenly spaced east/west and north/south on the cloth. The circles are formed of a very thin layer polythene or other impervious but highly flexible material. These circular membranes are arranged to show a colour, most likely red. These circles of red membrane have one or more perforations.

By a further process, the circles are "over printed" with a semi solid or gel type disinfectant. This disinfectant layer might typically be 1.00mm thick. The disinfectant is water-soluble and it is coloured, perhaps yellow.

By a further process a transparent waterproof membrane is applied to cover all of the circles and the whole of this side of the cloth. This sheet membrane is welded to both the cloth, between the circles, and to the perimeter only of each circle, so that the disinfectant is contained within cells or pockets.

With the cloth dampened, and flexed in work, moisture will pass through the perforations in the red circular membranes and dissolve a portion of the semi-solid disinfectant, with further flexing the now liquid portion of the disinfectant will leak into the fabric of the cloth, so maintaining it safe and hygienic.

Gradually, through work, the cells will empty until there is no yellow disinfectant left. So, at this point, when the cloth has reached the end of its hygienic life, a colour change will be apparent to the user, where before the cloth had yellow circles, it now has red circles - warning of its imminent descent into an unhygienic state.

According to another aspect of the present invention there is provided a hand-cloth interface for use in protecting a user's hand during cleaning tasks comprising a body having a plurality of finger members extending therefrom; and resilient hand support means for securing the hand-cloth interface to a hand, wherein said resilient hand support means comprises both finger support means and palm support means for respectively securing the hand-cloth interface to the fingers and palm of a user's hand.

The term 'hand-cloth interface-like interface' (or simply 'hand-cloth interface') herein is used to mean a wearable framework, device or apparatus, which protects at least part of the hand of a user during the undertaking of various cleaning tasks. The 'hand-cloth interface' provides an interface between the user's hand and the cleaning cloth.

In aspects, the hand-cloth interface is designed to afford maximum comfort to the hand whilst maximising the work area covered by the hand and the efficiency of the cleaning task.

Suitably, the hand-cloth interface is adaptable for use with user hand's of varying sizes.

In one aspect, the hand-cloth interface is a full hand-cloth interface (i.e. all of the hand and fingers are enclosable thereby).

In another aspect, the hand-cloth interface is a part-hand-cloth interface (i.e. at least part of the hand and fingers are not enclosable thereby). Aspects are envisaged in which the hand-cloth interface has an open framework or lattice-type structure.

Suitably, the hand-cloth interface-like interface in use, covers the users' fingers and at least part of the user's palm but leaves the top part of the user's hand and fingers uncovered. This embodiment provides enhanced user utility in terms of ease of hand and finger movements.

In embodiments, the hand-cloth interface herein is also shaped to be put on by the user in a one-handed operation which enhances ease and speed of user "pick up". This contrasts with the operation to put on most traditional hand-cloth interfaces, which is a two handed operation.

The hand-cloth interface-like interface is provided with a body, which in use, typically covers part or all of the user's palm and fingers. The body has a plurality (e.g. four) of finger members extending therefrom. In aspects, a thumb member is also provided.

The body has essentially two functions. Firstly, it provides a degree of protection to the user's hand whilst conducting utility tasks. Secondly it provides a support for the application of utility media by the hand.

Suitably, the body provides a rigid support for the cleaning cloth, but is entirely flexible to the movement and dexterity of the hand. In one aspect, the body provides a rigid mounting for the attachment of a cleaning cloth thereto.

Suitably, the body is shaped to provide a uniform, e.g. flat work surface (i.e. utility surface). This contrasts with the non-uniform, rounded form, work surface provided by the uncovered palm and underside of fingers of a user's hand.

In aspects, the body is shaped to improve overall hand-cloth interface flexibility. In aspects, the palm-protecting part of the body is shaped and/or cut with various patterns. In one aspect, a split is provided deep into the palm element in the line between each finger element to allow maximum lateral flexibility regardless of the size of hand being applied to it. The split lines conclude in a "T" form, which further enhances lateral flexibility.

In one aspect, the finger members incorporate a feature at the junction thereof with the palm element, which adapts to account for extremes of finger length and optionally, enhances the framework's lateral dexterity. Suitably, this feature comprises a diamond-shaped extendable element.

In one aspect, the finger members have side walls to at least partially encase a finger. The side walls do not necessarily have a finger support function, although embodiments are envisaged in which the side walls do form components of the finger support means herein.

In one aspect, the hand-cloth interface is designed such that it covers only that part of the palm that can be comfortably reached by the fingers. When the hand-cloth interface is provided with a cleaning cloth herein, this provides the function that the hand-cloth interface can be efficiently wrung out by a simple clenching of the fist.

Suitably, the hand-cloth interface-like interface herein is arranged to cooperate with those elements common to all sizes of user hands. Without reliance on fabric elasticity, it is suitably configured to offer a fit for the majority (e.g. 90%+) of all adult hand sizes. Traditional hand-cloth interface forms account for this variable by offering different sizes of product or by use of stretch fabrics, whereas this interface

does so by means of resilient hand support means for securing the hand-cloth interface to a user's hand.

The resilient hand support means comprises both finger support means and palm support means for respectively securing the hand-cloth interface to both the fingers and palm elements of a user's hand. The support may in aspects have a gripping function (i.e. finger grip means and/or palm grip means). Preferably, the hand-cloth interface comprises finger support means on each finger member.

The resilient finger support means acts to hold the hand-cloth interface tight against the underside of at least part of the user's fingers. Suitably, this prevents any tendency for the hand-cloth interface to sag downwards from the fingers. In aspects, the resilient finger support means also acts to hold the hand-cloth interface firmly up against the user's finger tips.

Given that the finger support means are resilient, they can adjust to the thickness of the finger and hence accommodate fingers of different length and size. The resilience may come from the material of construction of the support means (i.e. the material itself is resilient) or it may come from the structural form / arrangement of the support means e.g. through play or springing.

In one aspect, the resilient finger support means comprises a caged framework (e.g. housing) shaped to snugly receive a user's finger tip. The cage provides ample space for a user's finger-nail.

In another aspect, the resilient finger support means defines a constricted passageway shaped to engage with a user's finger. Suitably, the constriction is of resilient character such that a first finger joint may be squeezed into the passageway past the constriction. In this case, the resilient finger support means typically secures a user's finger between the first and second joints of that finger.

In one aspect, the resilient finger support means takes the form of a sprung clip, which itself may act to constrict a finger passageway.

In another aspect, the passageway comprises side walls provided with grips for gripping above and beside the finger between its first and second joints, so securing the framework to each finger. Suitably, at the point where these grips act on the side wall, the inner face of the wall is "bellied" inwards, better to grip the natural form of the finger. Suitably, these "bellied" forms are provided with a "saw tooth" form to better grip the finger.

In one aspect, the finger grips are provided with side or top mounted lugs, which are shaped to cooperate with a base station (described hereinafter).

The palm support means herein functions to support the body (e.g. palm-protecting part) of the hand-cloth interface and to retain it firmly against the underside of the user's hand. Suitably, the palm support means secures the body of the hand-cloth interface to the base of the fingers and/or the palm of the user's hand.

Suitably, the palm support means takes the form of one or more resilient yokes. The yokes are shaped for receipt at the junction between the fingers of a user (i.e. at the junction of either the first and second, second and third, or third and fourth fingers).

Suitably, the yokes are shaped to cooperate with the natural taper common to all hands. The resilient nature of the yoke once again affords the hand-cloth interface to accommodate and adjust to various hand sizes.

Suitably, the one or more yokes have a T-form. In particular, each yoke comprises a vertical trunk with horizontally extended arms and legs. In use, the T-form yoke fits between a user's adjacent fingers.

In one aspect, each yoke comprises two pairs of independent arms, each pair mounted on a corresponding vertical trunk. This configuration allows even greater freedom of movement.

Suitably, in use with a large hand the vertical trunk of the yoke sits forward of the junction of finger and palm of a large hand, so that in use, the shorter fingers of a smaller hand may engage fully with the finger support means.

Preferably, the hand-cloth interface comprises two or three resilient palm support members (e.g. yokes), each of which may comprise pairs of independent arms.

In aspects, the resilient finger and/or palm support means are made from sprung steel wire or moulded (e.g. injection moulded) plastics.

In one aspect, the hand-cloth interface additionally comprises at least one substantially "V"-shaped excision running transversely across the underside of the hand-cloth interface, preferably on the finger members. The combination of the flexibility of the hand-cloth interface material and the presence of the "V"-shaped excisions permits the hand-cloth interface to collapse with ease, for example, if the wearer clenches his/her fist, e.g. to wring any liquid from the hand-cloth interface.

Suitably, between each "V"-shaped excision there is provided a bridge member. Each bridge member may form a support for the utility attachments on the underside of each finger member. When the hand is clenched into a fist, the combined width of the one or more bridge members may approximate to the reduced length of the underside of the finger member. Thus, there is no "bulking" of hand-cloth interface material, for example, inside a clenched fist.

Suitably, the hand-cloth interface has more than one substantially "V"-shaped excision running transversely across the underside of each finger member. Suitably, the hand-cloth interface has a plurality of "V"-shaped excisions running transversely

across the underside of each finger member. Typically, each "V"-shaped excision is separated by a bridge member.

In a subsidiary aspect, the presence of "V"-shaped excisions on the underside of the hand-cloth interface can also facilitate the accommodation of different hand sizes. This is because the incisions render the finger members highly flexible so that an over wide finger may simply displace them.

Suitably, the hand-cloth interface is made from a semi-rigid or rigid material. In aspects, polymer materials such as those suitable for use in injection moulding processes are suitable.

Suitably, parts of the hand-cloth interface are constructed from fabrics and/or composite materials.

In one particular aspect, the hand-cloth interface comprises a foamed block body, having a plurality of finger-receiving channels defined therein; and palm support means for securing said interface to the palm of a user's hand, wherein the finger-receiving channels snugly receive the fingers of said user's hand such that in use, the palm support means and finger-receiving channels secure the interface to the user's hand.

In this particular aspect, the hand-utility interface comprises a block form body. The body has essentially two functions. Firstly, it provides a degree of protection to the user's hand whilst conducting utility tasks. Secondly it provides a support for the application of utility media by the hand. One or more apertures are provided to the block form body to enable the transparent layer 'viewing window' to be visible to the user through those apertures.

Preferably, the block form body is shaped to provide a uniform, e.g. flat work surface (i.e. utility surface) that typically takes the form of a continuous pad in use, locating

under the hand of the user. This contrasts with the non-uniform, rounded form, work surface provided by the un-gloved palm and underside of fingers of a user's hand.

The block form body is generally comprised of a foamed or sponge-like material. The material suitably comprises a synthetic polymer material that has a foamed structure (i.e. comprising foamed bubble features). In essence, suitable foam materials are those that offer the characteristics of 'sponge' such as its natural give and crushability, resilience and ability to absorb and carry liquid media. Suitable materials include 'open foam', where the individual bubbles are incomplete spheres, and 'closed foam', where the spheres are complete, this latter type having considerably less water absorption ability.

The body has a block form. That is to say, overall it has a generally block-like three-dimensional form. The body has plural (generally, four) finger-receiving channels defined therein. The finger-receiving channels may be provided to the block form body in any suitable manner including cutting out the channels or by injection-moulding the form of the body with the finger-receiving channels defined therein.

The surface of the block form body that in use, contacts the palm of the user might be flat, or it might be domed better to locate it under the hand for added user comfort.

Suitably the block form body is also shaped such that in a line, more or less ahead of the second finger-receiving channel (i.e. that channel that in use, receives the second finger of a user), the form of the body produces a soft 90 degree angle, the lines of which are interrupted by the finger tip protecting ends of the body for the index and third fingers. The purpose is to produce a form that is good at getting into corners, for example where the wipe being used is for window cleaning. In use, the finger tip protecting ends of the body for the index and third fingers are suitably arranged to crush down, so providing, for example, a good form for sweeping a window frame immediately adjacent to the glass.

Depending upon the nature of the selected block form body, the perimeter (plan view) of the interface may extend out to produce a surface considerably bigger than the hand. To do this and allow that the extreme of the perimeter has sufficient inherent strength to perform useful work may require a more rigid/stiffer foam type.

In the particular aspect, the finger-receiving channels replace the finger support means of the earlier described embodiment. Each finger-receiving channel is sized and shaped to snugly receive a finger of a user. The snug receipt is assisted by the resilience characteristics of the material comprising the body, which mean that the walls of each finger-receiving channel tend to give as the finger is inserted and naturally adapt to any further finger movement to maintain snug finger-receipt.

Each finger-receiving channel defines opposing side walls to at least partially encase a snugly-received finger. It will be appreciated that the side walls also act to divide each finger-receiving channel off from its adjacent neighbour(s). The side walls may provide a finger support function, as a result of their resilient character. The sidewalls may however, also enable (and e.g. be shaped for) in use, grip by the fingers of the user. Thus, for example for any two adjacent finger-receiving channels (e.g. between the first and second, second and third or third and fourth fingers) the user may apply gripping force between his /her relevant fingers to the divider wall between the adjacent finger-receiving channels thereby gripping onto that divider wall.

The finger channels in general, have an elongate 'U' shape. In one, the finger channels are tapered along the channel. This tapering form is designed to assist user insertion of his/her fingers into each channel. In another aspect, the uppermost portion of the 'U' shaped channels closes in a little, better to close over the top part of the finger.

In general terms, the walls of the finger channels need to be sufficiently high that the fingers of the small, ladies hand are completely concealed in side elevation. The wall

height is generally also sufficient that at least two thirds of the big male finger depth is concealed in side elevation.

The cleaning cloth may either be permanently attached to the hand-cloth interface or reversibly receivable by the hand-cloth interface. For example, the hand-cloth interface-like interface and cleaning cloth may be formed as cooperating elements, the cleaning cloth being interchangeable and/or replaceable.

In one aspect, the finger elements and/or finger support means of the hand-cloth interface are provided with side or top mounted lugs, which are shaped to cooperate with a base station. Suitably, the base station is in this aspect provided outward bowed mounting rails such that, when the hand pushes the framework into the base station, the finger grips are caused to open, so releasing the fingers and "parking" the hand-cloth interface. The hand-cloth interface is automatically coupled to the hand again by inserting the fingers and driving it forward off the rails.

In another aspect, the base station is arranged to interact with the hand-cloth interface such that the whole of a finger-tip assembly is opened by its interaction with the base station. This embodiment provides for the efficient gripping of all sizes of finger-tip.

In yet another aspect, the invention provides a kit of parts for a utility hand-cloth interface comprising a hand-cloth interface as defined *supra* and a cleaning cloth as defined *supra*. Optionally, the kit of parts further comprises a housing for said hand-cloth interface.

#### Brief Description of the Drawings

The invention will now be described further with reference to the accompanying drawings, in which:-

Figure 1 shows a side view of a cleaning cloth in accord with the present invention;

Figure 2 shows a plan view of a second cleaning cloth in accord with the present invention;

Figure 6a shows a side view of a hand-cloth interface for use with a cleaning cloth in accord with the invention;

Figure 6b shows a top cross-sectional view of the hand-cloth interface of Figure 6a shown along the cross-section defined by line A-A' of Figure 6a;

Figure 6c shows a back end elevation of the second hand-cloth interface of Figure 6a; and

Figure 6d shows palm support means suitable for use in the second hand-cloth interface of Figure 6a.

Referring now to the drawings, Figure 1 illustrates a cleaning cloth 50 herein. The cloth comprises a bottom sheet 52 in the form of an absorbent cloth layer (e.g. formed from a suitable woven or non-woven material). Adjacent to the absorbent cloth layer 52, there is provided a perforate layer 54 comprising coloured (e.g. red) material. In aspects, the perforate layer 54 may be provided with suitable markings (e.g. indicia of any suitable form). Adjacent to the perforate layer, there is provided a top sheet 56 in the form of a fluid impermeable layer comprising a transparent material. The fluid impermeable layer 56 joins to said the perforate layer 54 and absorbent cloth layer 52 at respective joins 58 and 57. A reservoir 60 for receipt of cleaning media is defined between the fluid impermeable layer 56 and the perforate layer 54. The reservoir 60 is provided with coloured (e.g. green) liquid detergent 62.

When the reservoir 60 is full, the detergent 62 content thereof is visible to the user through the transparent liquid impermeable layer 56. The coloured perforate layer

54 is however, at least partly obscured from view by the presence of the detergent. In use, however as detergent 62 is supplied to the absorbent cloth 52 through the perforate layer the amount of obscuring detergent 62 in the reservoir is reduced. When the reservoir 60 is empty of detergent, the coloured perforate layer 54 becomes clearly visible through the transparent liquid impermeable layer 56 and this acts as a signal to the user that the reservoir 60 is empty and therefore that another cleaning cloth 50 must be selected to continue with the cleaning operation.

Figure 2 illustrates a top view of a second cleaning cloth 250 herein that is shaped for particular use with the hand-cloth interface of Figures 6a-6d. The liquid impermeable, transparent top sheet 256 of the cloth 250 is shaped to mirror that of the underside of the body 101 of the interface (e.g. as shown in Figure 6b) to which it is applied in mating contact. Plural reservoirs 260a-e are provided to the cloth 250 and visible through top sheet 256. Reservoirs 260a-d correspond to finger contact locations and reservoir 260e to a palm location. The overall layer structure of the cleaning cloth 250 corresponds closely to that of Figure 1.

As shown, the cloth 250 of Figure 2 is partly depleted of cleaning media. Detergent 262 is visible in the palm reservoir 260e, but the indicia 255 'EMPTY' which is printed on the perforate layer 254 is visible in the finger reservoirs 260a-d thereby serving to indicate that these reservoirs have been emptied of detergent and that another cloth 250 should be selected.

Figures 6a-6c illustrate a hand-cloth interface 102 suitable for use with the cleaning cloth herein and Figure 6d illustrates palm support means 106a, 106b suitable for use with the hand-cloth interface of Figures 6a-6c. Each finger portion 110a-110d of the hand-cloth interface 102 is provided with a finger grip 104a-104d in the form of a cage, which surrounds the end of a user's finger and each of which is provided with a thimble-like end 112a-112d. Each finger 110a-110d of the hand-cloth interface 102 is also provided with an inwardly tapering constriction 105a-105d located at a point below the foremost portion of the finger tip cage 104a-104d, which in use,

corresponds approximately to a point below the first joint of the user's finger. The gripping portion of the finger tip cage 104a-d (i.e. that which acts on the constriction 105a-d) is that part interior to the lug 148, as shown in Figure 6a. The gripping point will differ for different user hand sizes. On a small hand, the constriction 105a-105d locates more or less central to the first and second finger joints; on a large hand the constriction 105a-105d locates just behind the first finger joint. It may be appreciated that in use, both the finger grip framework 104a-104d and the constriction 105a-105d act such as to retain the user's finger within the hand-cloth interface.

The hand-cloth interface 102 is also provided with T-form yokes 106a, 106b each comprising pairs of gripping arms 132a, 132b and 132c, 132d (shown in outline in Figure 6a). The form of the T-form yokes 106a, 106b may be better understood by reference to Figure 6d from which it may be appreciated that each gripping arm 132a-132d is independently movable. Indeed, each yoke 106a, 106b is comprised of two separate arm 132a, 132c and 132b, 132d; trunk 134a, 134c and 134b, 134d; and base 136a, 136c and 136b, 136d elements. In use, the T-forms yokes 106a, 106b respectively engage the node between a user's first and second, and third and fourth fingers.

In tandem, the finger grips 104a-104d and T-form yokes 106a, 106b form the means to retain the hand-cloth interface on the user's hand. The independent movability of each of these elements, in turn contributes to the ability of the hand-cloth interface to both protect the user's palm and fingers without hampering the movement of the user's hand and fingers.

The underside base 101 of the hand-cloth interface 102 is formed from a flexible, but resilient material (e.g. foam). The base 101 is provided with various shape characteristics to maximise its flexibility. These comprise longitudinal cutaway portions 140 (one only labelled, for clarity) in the palm of base 101; diamond-shaped extensible portions 142 (again, one only labelled) at the palm-end of each finger portion 110a-110d, which provide flexibility in accommodating an unusually long

user's finger; and "v"-shaped incisions 114 (one labelled only) running transversely across the underside of each finger portion 110a-110d of the hand-cloth interface 102, which enables ready finger movement.

In the at rest mode, the base 101 of the hand-cloth interface 102 has a uniform flat profile and is therefore ideally shaped to receive a cleaning cloth as described herein. The base 101 is further provided with wall 146, which assists the stability of the interface 102 on the user's hand when in use. Each finger grip 104a-d is further provided with substantially triangular-shaped lug 148 (one only shown, for clarity) for use in mounting the hand-cloth interface 102 to a base station or housing.

In use, base 101 of the hand-cloth interface 102 is designed to cover at least that part of a user's palm that can be comfortably reached by the user's fingers once they are curled over. This ensures that an attached cleaning cloth can be efficiently wrung out by a simple clenching of the user's fist.

It will be understood that the present disclosure is for the purpose of illustration only and the invention extends to modifications, variations and improvements thereto.

The application of which this description and claims form part may be used as a basis for priority in respect of any subsequent application. The claims of such subsequent application may be directed to any feature or combination of features described therein. They may take the form of product, method or use claims and may include, by way of example and without limitation, one or more of the following claims:

Claims

1. A multi-layer form cleaning cloth comprising
  - (a) an absorbent cloth layer;
  - (b) adjacent to said absorbent cloth layer, a perforate layer comprising at least partly non-transparent material; and
  - (c) adjacent to said perforate layer, a fluid impermeable layer comprising at least partly a transparent material, said fluid impermeable layer joining to said perforate layer such that a reservoir for receipt of cleaning media is defined,

wherein the non-transparent perforate layer is visible through the transparent liquid impermeable layer when the reservoir is empty of cleaning media.

### Abstract

There is provided a multi-layer form cleaning cloth. The cloth comprises an absorbent cloth layer; adjacent to said absorbent cloth layer, a perforate layer comprising at least partly non-transparent material; and adjacent to said perforate layer, a fluid impermeable layer comprising at least partly a transparent material, said fluid impermeable layer joining to said perforate layer such that a reservoir for receipt of cleaning media is defined therebetween. The non-transparent perforate layer is visible through the transparent liquid impermeable layer when the reservoir is empty of cleaning media.

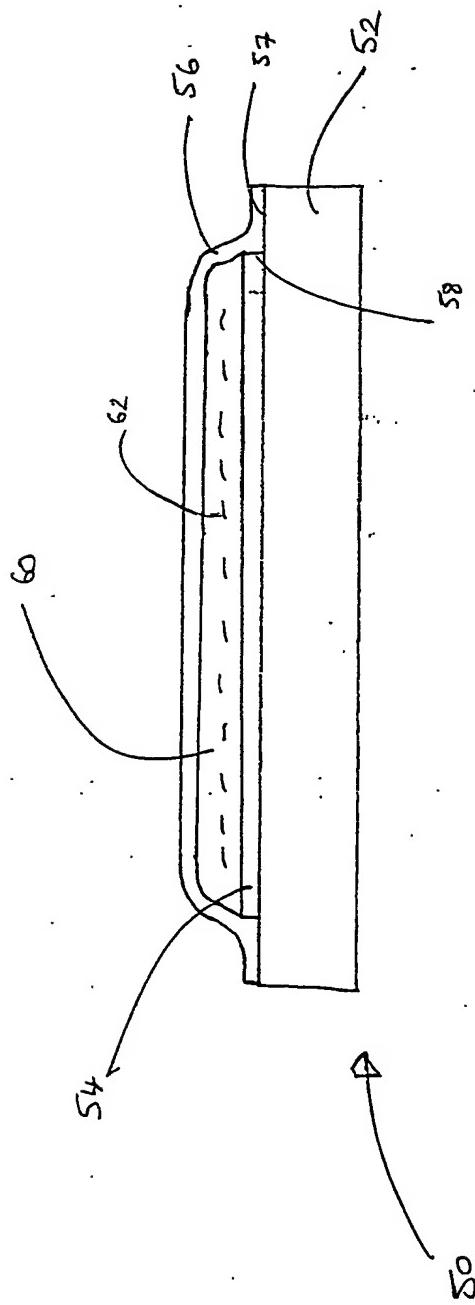


Figure 7

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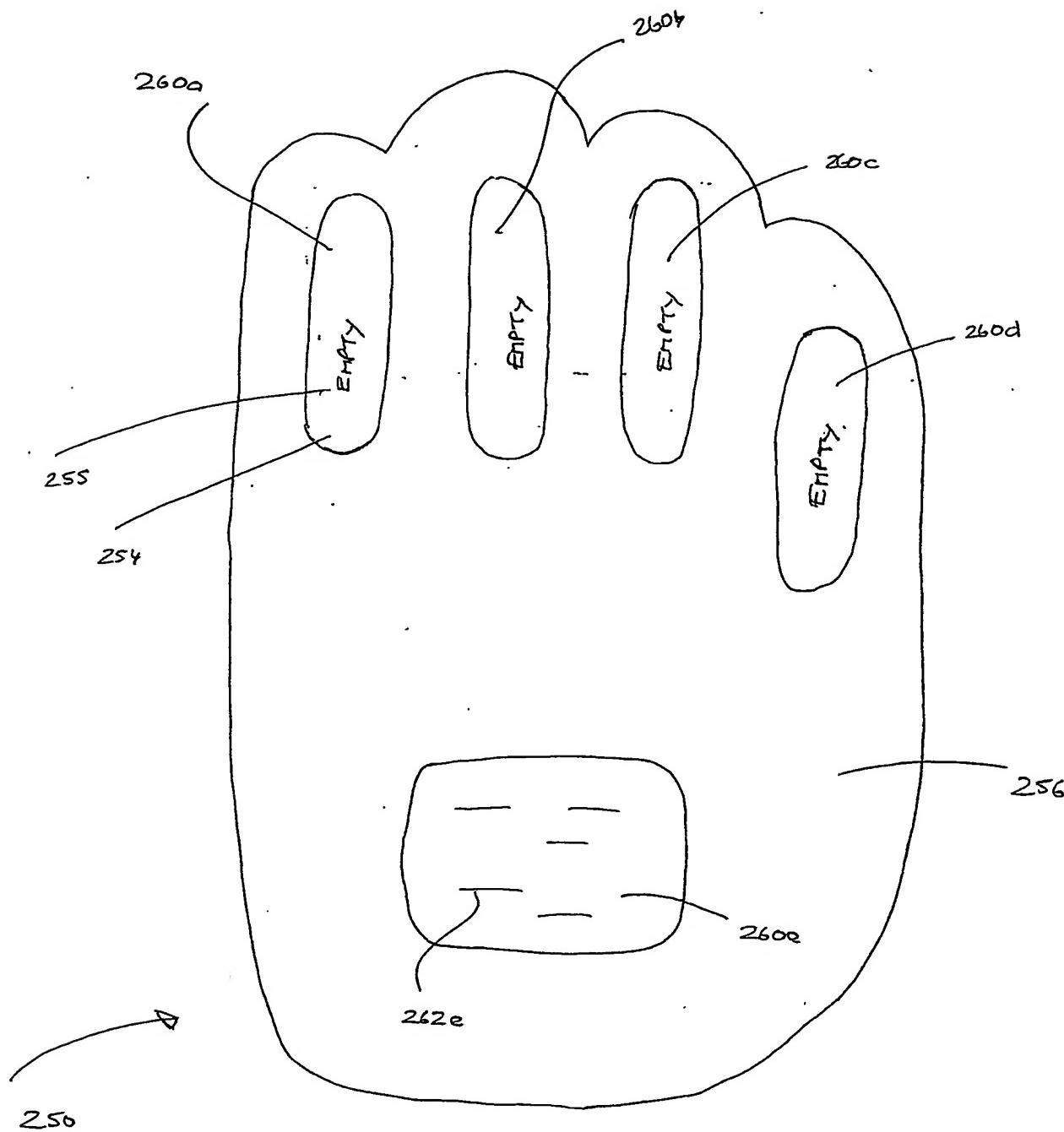
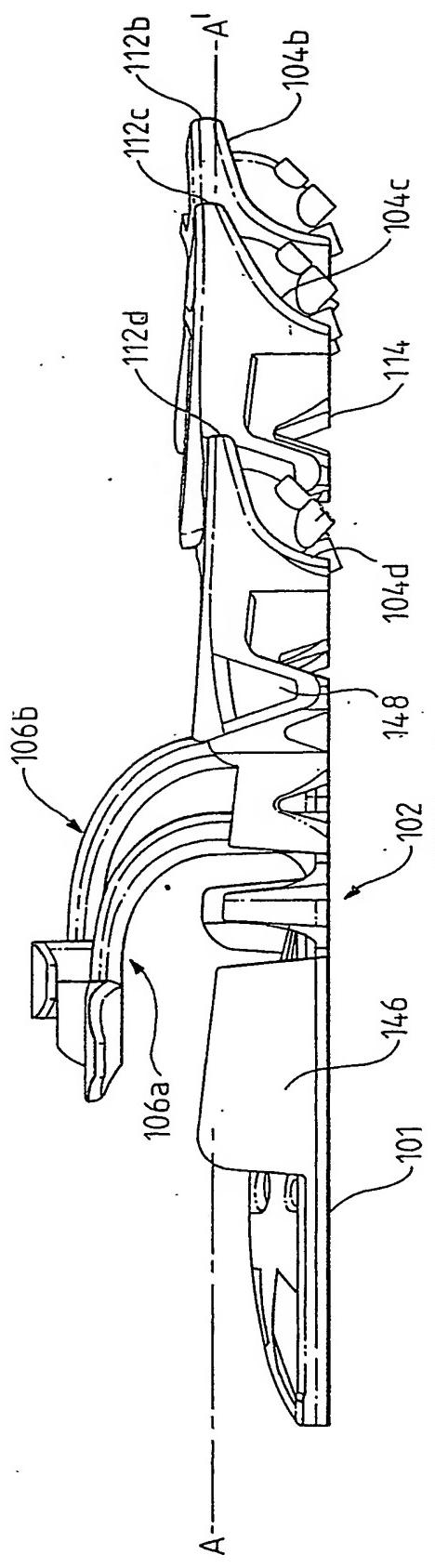


Figure 2



112

FIG. 6A.

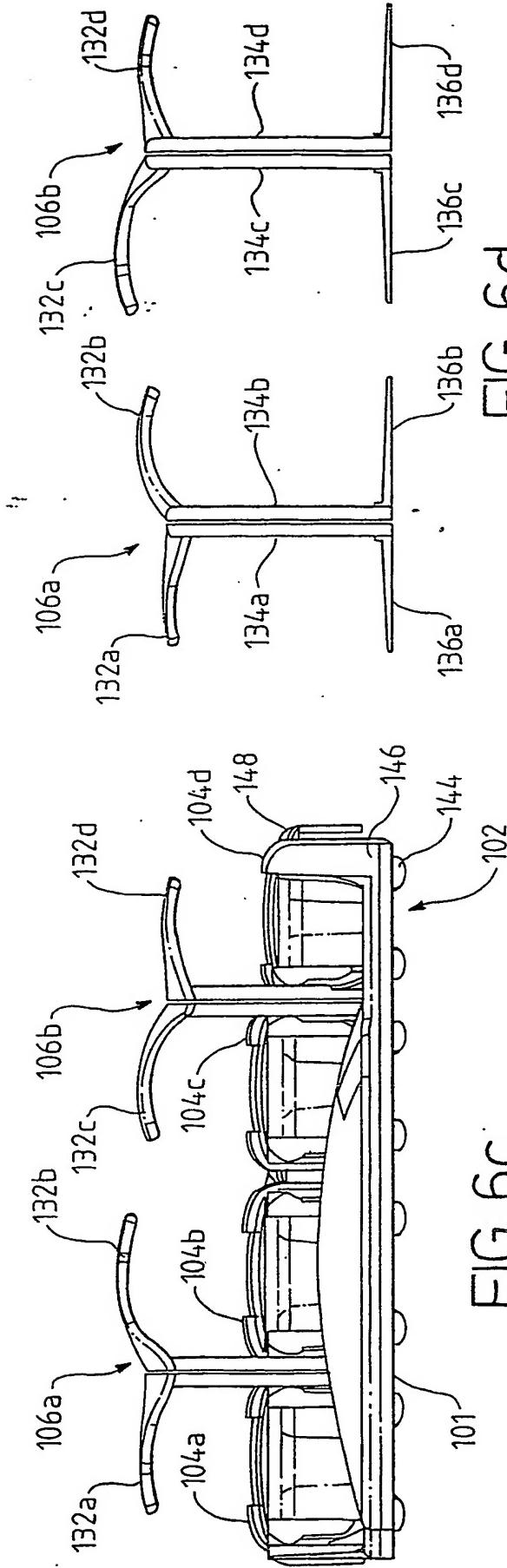


FIG. 6d

4.1

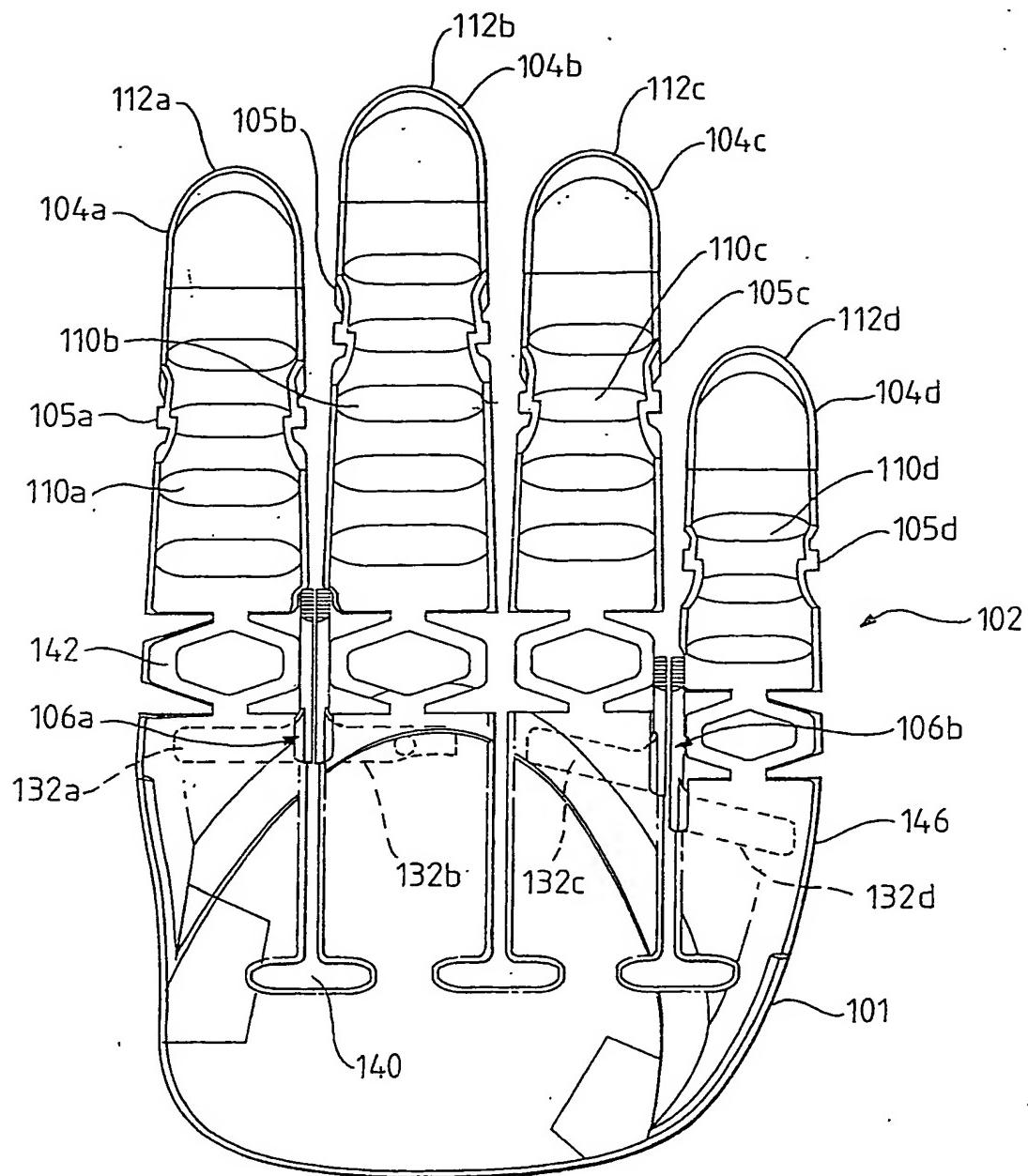


FIG. 6b

PCT/EP2004/004143



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